

Listing of Claims

1. (Currently amended) An isolated bacterial *Pseudomonas* strain selected from the group consisting of *Pseudomonas fluorescens* Biotype B-E34, *Pseudomonas fluorescens* Biotype C-WH19, *Pseudomonas fluorescens* Biotype C-WH6, *Pseudomonas putida* Biotype B-AH4, and *Pseudomonas putida* Biotype B-AD31, wherein the *Pseudomonas* bacterial strain inhibits or arrests grassy weed germination and produces Germination-Arrest Factor (GAF).

2. – 5. (canceled)

6. (Currently amended) A Germination-Arrest Factor, wherein the factor is produced by the isolated bacterial *Pseudomonas* strain of claim 1, and wherein the Germination-Arrest Factor inhibits or arrests grassy weed germination.

7. (Previously presented) The Germination-Arrest Factor of claim 6, wherein the grassy weed is *Poa annua* (annual bluegrass), *Poa trivialis* (roughstalk bluegrass), *Bromus tectorum* (downy brome), crabgrass, goosegrass, dallisgrass, bahiagrass, jointed goatgrass, ratail fescue, perennial ryegrass, or tall fescue.

8. (canceled)

9. (Previously presented) The Germination-Arrest Factor of claim 6, wherein the Germination-Arrest Factor (a) is a hydrophilic molecule, (b) has a molecular weight less than 3,000 daltons, (c) reacts with ninhydrin, (d) comprises an ionizable group, or (e) a combination of two or more of (a), (b), (c), and (d).

10. – 12. (canceled)

13. (Currently amended) An isolated nucleic acid as set forth in:

(a) SEQ ID NO: 2;

— (b) SEQ ID NO: 7;

(c) (b) SEQ ID NO: 10; or

~~(d)(c)~~ sequences having at least 90% sequence identity to (a) or (b), (b), ~~or (e)~~; wherein the nucleic acid encodes a Germination-Arrest Factor or a protein involved in the synthesis and or secretion of a Germination-Arrest Factor.

14. (Previously presented) An isolated Germination-Arrest Factor protein encoded by the nucleic acid of claim 13 and comprising an amino acid sequence as set forth in:

- (a) SEQ ID NO: 3;
- (b) SEQ ID NO: 4;
- (c) SEQ ID NO: 8;
- (d) SEQ ID NO: 11;
- (e) SEQ ID NO: 12;
- (f) SEQ ID NO: 13;
- (g) sequences having at least 90% sequence identity to (a), (b), (c), (d), (e), or (f); or
- (h) conservative variants of (a), (b), (c), (d), (e), or (f);

wherein the Germination-Arrest Factor protein inhibits or arrests germination in grassy weeds or is involved in the synthesis or secretion of a Germination Arrest Factor.

15. (Previously presented) The Germination-Arrest Factor protein of claim 14, wherein the grassy weed is *Poa annua* (annual bluegrass), *Poa trivialis* (roughstalk bluegrass), *Bromus tectorum* (downy brome), crabgrass, goosegrass, dallisgrass, bahiagrass, jointed goatgrass, ratail fescue, perennial ryegrass, or tall fescue.

16. – 21. (canceled)

22. (Currently amended) A method of inhibiting or arresting weed germination in a growth medium in which it would be desirable to inhibit or arrest grassy weed germination, or of inhibiting or arresting weed germination in grass seed, the method comprising applying a sample of the isolated ~~bacterial~~ *Pseudomonas* strain of claim 1 or the Germination-Arrest Factor of claim 6, to the growth medium or to the grass seed in an amount sufficient to inhibit or arrest grassy weed germination.

23. (canceled)

24. (Previously presented) The method of claim 22, wherein the sample or Germination-Arrest Factor is applied in a formulation that also comprises a surfactant, a stabilizer, a buffer, a preservative, an antioxidant, an extender, a solvent, an emulsifier, an invert emulsifier, a spreader, a sticker, a penetrant, a foaming agent, an anti-foaming agent, a thickener, a safener, a compatibility agent, a crop oil concentrate, a viscosity regulator, a binder, a tackifier, a drift control agent, a fertilizer, an antibiotic, a fungicide, a nematicide, or a pesticide.

25. (Previously presented) The method of claim 22, wherein the sample or Germination-Arrest Factor is applied in a formulation that is a solution, a soluble powder, an emulsifiable concentrate, a wettable powder, a liquid flowable, a dry flowable, a water-dispersible granule, a granule, or a pellet.

26. – 29. (canceled)

30. (Original) A composition for inhibiting or arresting the germination of grassy weeds, comprising:

the Germination-Arrest Factor of claim 6; and
a timed- or temperature-release coating over at least a portion of the Germination-Arrest Factor.

31. (Original) The composition of claim 30, further comprising a water-resistant coating over the timed-or temperature-release coating.

32. (Original) A method of inhibiting or arresting weed germination in an area in which inhibiting or arresting weed germination is desirable, comprising:

broadcasting an herbicidally effective amount of the Germination-Arrest Factor of claim 6 at least once a year across the area, thereby inhibiting or arresting weed germination in the area.

33. (Original) The method of claim 32, wherein the area is a grass patch, an agricultural field, a natural landscape, or a road-side.

34. (Original) The method of claim 32, wherein the Germination-Arrest Factor is applied in a formulation that also comprises a surfactant, a stabilizer, a buffer, a preservative, an antioxidant, an extender, a solvent, an emulsifier, an invert emulsifier, a spreader, a sticker, a penetrant, a foaming agent, an anti-foaming agent, a thickener, a safener, a compatibility agent, a crop oil concentrate, a viscosity regulator, a binder, a tackifier, a drift control agent, a fertilizer, an antibiotic, a fungicide, a nematicide, or a pesticide.

35. (Original) The method of claim 32, wherein the Germination-Arrest Factor is applied in a formulation that is a solution, a soluble powder, an emulsifiable concentrate, a wettable powder, a liquid flowable, a dry flowable, a water-dispersible granule, a granule, or a pellet.

36. (Original) The method of claim 35, wherein the Germination-Arrest Factor is formulated as a granule.

37. (Original) The method of claim 36, wherein the granule is at least partially coated with a timed-or temperature-release coating.

38. (Original) The method of claim 37, wherein the timed-or temperature-release coating is coated with a water-resistant coating.

39. (Original) The method of claim 32, wherein the method is a method of inhibiting grassy weeds among dicot species.

40. (Currently amended) A method of producing the Germination-Arrest Factor of claim 6 comprising:

culturing ~~the Pseudomonas fluorescens Biotype B E34, Pseudomonas fluorescens Biotype C WH19, Pseudomonas fluorescens C Biotype WH6, Pseudomonas putida Biotype B~~

~~AH4, *Pseudomonas putida* Biotype B AD31, or a combination thereof strain~~ in a suitable culture medium;

collecting the culture medium; and
purifying the culture medium to produce the Germination-Arrest Factor.

41. – 44. (canceled)

45. (Original) A kit for inhibiting or arresting grassy weed growth, comprising:
the Germination-Arrest Factor of claim 6; and
a container.

46. – 47. (canceled)

48. (Previously presented) A method of using the Germination-Arrest Factor of claim 6 to investigate regulation of seed germination and seedling development comprising using Germination-Arrest Factor to probe for regulatory sites in plant cells and regulatory mechanisms controlling seed germination and development.

49. (Previously presented) A *Pseudomonas fluorescens* or *Pseudomonas putida* bacterial strain having the GAF-producing characteristics of *Pseudomonas fluorescens* Biotype B E34 (deposited as NRRL # B-30481), *Pseudomonas fluorescens* Biotype C WH19 (deposited as NRRL # B-30484), *Pseudomonas fluorescens* C Biotype WH6 (deposited as NRRL # B-30485), *Pseudomonas putida* Biotype B AH4 (deposited as NRRL # B-30482), or *Pseudomonas putida* Biotype B AD31 (deposited as NRRL # B-30483).

50. (Original) A Germination-Arrest Factor produced by the bacterial strain of claim 49, wherein Germination-Arrest Factor is a hydrophilic molecule, has a molecular weight less than 3,000 daltons, reacts with ninhydrin, and comprises an ionizable group.

51. – 52 (canceled)

53. (New) The isolated *Pseudomonas* strain of claim 1, wherein the isolated strain has the characteristics of any one of *Pseudomonas fluorescens* Biotype B E34, *Pseudomonas fluorescens* Biotype C WH19, *Pseudomonas fluorescens* Biotype C WH6, *Pseudomonas putida* Biotype B AH4, or *Pseudomonas putida* Biotype B AD31.

54. (New) The isolated *Pseudomonas* strain of claim 1, wherein the isolated strain is selected from the group consisting of *Pseudomonas fluorescens* Biotype B E34, *Pseudomonas fluorescens* Biotype C WH19, *Pseudomonas fluorescens* Biotype C WH6, *Pseudomonas putida* Biotype B AH4, and *Pseudomonas putida* Biotype B AD31.